

## Medical history

# Sudden infant death in history and literature

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The unexpected and sudden death of a seemingly healthy baby is probably the most devastating and earth shattering event that can befall a young couple: this has been so for thousands of years. Euripides records such an instance in 480–406 BC:

'What greater pain can mortals bear than this; to see their children die before their eyes?'

It is customary in medical reviews to give reference to the first published description of the disease or condition. In the case of sudden infant deaths this is difficult as the first description cannot be found in a learned scientific journal but in the most famous book of all time, the *Holy Bible*. In the Old Testament, in the third chapter of the first book of Kings, the 'judgement of Solomon' is described. Solomon had to establish the parentage of a surviving infant when two women came to him both claiming to be its mother. In the 19th verse the reason that there were two mothers and only one child is unfolded. The other child had been 'overlain in the night'. Overlaying was the classical belief for the cause of sudden infant death. Infants were thought to be suffocated by mothers or bed clothes. Throughout the ages until the first quarter of this century it was very common for young babies to sleep in the family bed, except in the upper strata of society.<sup>1</sup> The beds were often deep and soft, and mothers were not so figure conscious as now and of larger proportions. When a sudden infant death occurred and the infant was found dead in the maternal bed in the morning it was natural for everyone to assume that the baby had been suffocated by being buried . . . overlain.

If we now turn our attention to the other great civilisations of this time, it is reported by Diodorus Siculus (1st century BC) that in Egypt mothers who were held responsible for overlaying their babies were not executed as was the practice for murder but were condemned to hug their offspring continually for three days and nights so that the mother would experience her full deserts of remorse and horror. In Babylonia sudden infant death was attributed to the demon god Larbatu.

Greek literature has many references to infant death but there are no specific instances of sudden infant death or overlaying. Latin literature provides more examples of sudden infant death as for instance in the sixth book of Virgil's *Aeneid* (his famous work describing the wanderings of Aeneas from the ruins of Troy to the founding of Rome).

'At once were voices heard, a sound of mewling and wailing,  
Ghosts of infants' sobbing there at the threshold,  
infants,  
From whom a dark day stole their share of delicious life,  
Snatched them away from the breast, gave them sour death to drink.'

During the 'Dark ages' that followed the collapse of the Roman civilisation there were few records. There is no mention of sudden infant death in the *Anglo Saxon Chronicle*. The next recorded occurrence is in a medieval book by a Welsh priest Giraldus Cambrensis. In 1188 he accompanied Archbishop Baldwin on a recruiting campaign for the third crusade. At Cardigan a sermon calling for volunteers was preached. A number of men came forward but the wife of one grabbed her husband's cloak and prevented him from 'taking the cross'. Three nights later she woke up suddenly after a dream and on falling asleep again accidentally smothered or overlaid her baby which Giraldus said 'with more affection than prudence she had brought into her own bed'.

At a similar period in 1291 in a German placard cited by Sudhoff (*Dresden Catalogue* 6375) mothers were forbidden to take infants under 3 years into their beds at night. This is very similar to a law in Britain that is still on the statute book; the Children and Young Persons Act, which categorically states that an adult is guilty of a criminal offence if he or she goes to bed in a drunken condition with an infant which is later found dead.

One might have expected a reference to sudden infant death in the 17th century diary of Pepys, acute social observer as he was, but there is none. In the appendices of the *Vernay Papers* written at the

same time, however, there are numerous cases mentioned where babies were not reported to have died of any particular identifiable cause and sudden infant death may well have been responsible. In his *Bills of Mortality for the City of London* in 1632 John Gaunt used overlaid and starved at nurse as causes of death categories.

That sudden infant death is hardly mentioned in this early period is not surprising as deliberate infanticide by exposure, suffocation, or other means was accepted practice. Thus an infant death due to overlaying was likely to be viewed with tolerance in most societies.<sup>2</sup> In Congreve's 1695 drama *Love for Love* a spendthrift libertine says of the mother of his illegitimate offspring:

'She knows my condition well enough, and might have overlaid the child a fortnight ago, if she had any forecast in her.'

On the whole the 18th century novelists found the death of children from infective disease more dramatic and distressing so there are few references to sudden infant death.

In the 19th century, as infant mortality was being researched, an increased interest in sudden infant death arose. Charles Dickens, when he wrote the passage below, may well have had sudden infant death in his mind:

'Of all things in life, there should be nothing so preventable, as there is nothing on the face of it so unnatural, as the death of a little child, yet it is of all things in life the commonest, the only thing we really make, as a community, the least effort to prevent.'

In 1862 Anthony Leared MD, Physician to the Great Northern Hospital, wrote in the *English Women's Journal* on infant mortality:

'Nor must we forget a lamentable but frequent cause of death, that in which the infant is "overlaid" in its slumbers by a careless, perhaps drunken nurse or mother. The deaths of no less than twelve infants from suffocation in bed were lately registered as having occurred within a single week.'

Later in 1871 Brendon Curgenven MRCS read a paper entitled *The waste of infant life* to the National Association for the Promotion of Social Science, in which he reported that 60% of infants on whom inquests were held had died from being overlain:

'Suffocation at the mother's breast is the most common form; this frequently occurs on Saturday night; the mother, it may be, has been drinking, or goes to bed late; takes her child to her breast; falls asleep, and awakes in the morning to find her infant dead. In most cases the child's head slips off the mother's arm during sleep, its face becomes buried beneath the breast, the bed-clothes at the same time covering its head; it dies without a struggle suffocated by the carbonic acid

exhaled from its own lungs. In winter these cases of suffocation occur most frequently in consequence of the mother unconsciously drawing the bed-clothes over her own shoulders.'

He also describes the first case of sudden infant death in twins that occurred in Warwickshire. The cause was thought to be suffocation by bed clothes but this is unlikely as research in the 20th century has shown that bed clothes are quite pervious to air in the quantities required for infant breathing and that a child always turns its head from a suffocating pillow.

The Australian Charles McCarthy in 1871 presented a paper on mortality of infants in which he suggested that the suffocation of cot death was caused by tight bandages and bed clothes around infants. At approximately the same time it was first noticed that sudden infant death was associated with an anomaly of the thymus.

Bertholds in his 1898 paper describes:

... 'a case in which a servant girl was entrusted with the care of an infant who was sleeping in its cradle near her. In the morning the previously healthy baby was found dead in his cradle. The girl was imprisoned and the authorities ordered an autopsy which was performed by Liman and Gravitz. Liman was unable to disprove Gravitz' contention that death was attributable to a colossally enlarged thymus pressing on trachea, bronchi and vessels. The magistrate released the woman'

In 1889 Paultouf published his concept of *Status Thymico lymphaticus*. His hypothesis was that the large thymus often found in victims of sudden infant death might have a causal relation. Hamar in 1906 showed, however, that this concept was false and Paultouf's findings were in fact normal.

With the decline of the thymic theory, blame again descended upon the caring for the dead infant. In Templeman's 1893 paper in the *Edinburgh Medical Journal* he stated that from 1882 to 1891 in the town of Dundee, 399 infants were reported to the police as having been found dead while in bed with their parents. With an 1891 census of 153 587 this 'overlaying' death rate of about 40 per year is striking. From Templeman's description of the pathologic findings, higher wintertime incidence, and age distribution, it is clear that the population was composed predominantly of victims of sudden infant death syndrome. The point of his essay was that a disproportionately large number of deaths occurred on Saturday nights, which he attributed to the frequency of alcoholic intoxication on Saturday evenings. This view was reinforced in C W Saleby's 1917 paper in which he reported that in 1912 in the Edinburgh district, 1348 infants died from being overlain and in 1917 only 704. This he reported as

being solely due to less drinking and drunkenness in women after a change in the licensing law.

Early in this century people were becoming more aware of the problem of sudden infant death as poignantly illustrated by W B Yeats in the 'Ballad of Moll Magee' (*Collected Poems* 1906):

'I lay upon my baby,  
Ye little childer dear,  
I looked on my cold baby  
When the morn grew frosty and clear.  
A weary woman sleeps so hard!  
My man grew red and pale,  
And gave me money, and bade me go  
To my own place, Kinsale.  
He drove me out and shut the door,  
And gave his curse to me;  
I went away in silence,  
No neighbour could I see.'

With social changes and an increase in the standard of living, most infants were given a separate bed during this century and therefore overlaying could not occur. Sudden infant death carried on as before and blame moved to soft pillows and bedclothes as the cause of suffocation. This was disproved, however, and in addition it was well recognised that many sudden infant death victims died on their backs with their faces clear of pillows and bedclothes.<sup>2</sup>

Before the Second World War deaths that occurred suddenly, unexpectedly, and without any pathology recognisable at necropsy, were generally certified to one of the cause of death categories in keeping with the pathologists' personal inclination. At the beginning of the Second World War the pathology services were greatly improved and more necropsies were carried out for the coroner. Pathologists disliked using terms such as suffocation or overlaying as they were inaccurate and had overtones of unnatural death. The vast majority of pathologists became convinced that the deaths were due to natural causes. The nature of the natural disease was unknown and if the pathologist was honest he would have said 'unascertainable' or 'unknown' but to avoid this embarrassing situation the practice grew of calling the death the result of respiratory infection.<sup>1</sup>

In the late 1950s and early 1960s a theory was proposed by Parish and Barrett working at Cambridge,<sup>3</sup> in which sudden infant death was thought to be due to an allergic response to foreign protein in the form of cows' milk. This was the first clear effort to ascribe a natural process to the cause of death.

Knowledge of the epidemiology of sudden infant death was non-existent before the 1960s.<sup>4</sup> In 1963 the first conference on the cause of sudden infant

death took place in the United States. The conclusion of the conference stated:<sup>5</sup>

'One is startled to find that the number of infants who die of the sudden death syndrome is of a comparable order of magnitude to the number of adults who die from carcinoma of the lung. Despite this fact the information is miniscule in comparison to that on carcinoma of the lung. The many questions raised by this conference should provide a stimulus for more comprehensive and detailed studies from this and other countries.'

Following the lead of the Americans an 'Enquiry into Sudden Death in Infancy' was published in England in 1965.<sup>6</sup> There were three theories proposed as the cause (a) infection, (b) hypersensitivity, and (c) suffocation. The enormous lack of knowledge was realised and research priorities were detailed.

In 1969 a second international conference took place and the first formal presentations of epidemiology from other countries were made. At this conference the definition of sudden infant death was put forward by Dr J Bruce Beckwith of Seattle and this is widely accepted today.<sup>7</sup>

'The sudden death of an infant or young child, which is unexpected by history, and in which a thorough post mortem examination fails to demonstrate an adequate cause of death.'

With epidemiological research indicating that sudden infant death occurred in both the southern and northern hemispheres and in numerous cultures, the World Health Organisation created a category in the *International Classifications of Diseases*—'Sudden infant death' (coding number 798.0) in 1979.

It is important to realise that in the early literature before sudden infant death syndrome was clearly defined the deaths ascribed to overlaying or cot death included sudden unexpected deaths that later would have been explained at necropsy, as well as those for which no adequate explanation could be found.

Results of research have prompted numerous theories as to the cause of 'sudden infant death', including: allergy to cows' milk, virus infection, abnormal calcium metabolism, magnesium deficiency, bacterial infection, botulism, stress, house mite allergy, heart conduction defects, carbon dioxide pooling, hypothermia, hyperthermia, vitamin E deficiency, selenium deficiency, spinal haemorrhages, infanticide, electrolyte imbalances, lung surfactant, failure of immune system, errors of metabolism, and the apnoea theory.<sup>1 2 3 8 9 10</sup>

It is generally thought that there is no single cause of sudden infant death and that several factors come

together in a given baby at a given time to cause death. The most popular theory is the apnoea theory, first suggested by Steinschneider in 1972,<sup>10</sup> which centres around the control of breathing especially during sleep. The great number of theories prompted Lady Limerick to write in 1976 at the Francis Camps International Symposium in Canada:<sup>11</sup>

'When theories compete in profusion  
Then the experts conclude, in confusion,  
There'll be flaws in all laws  
Of this unexplained cause  
Till the problem is solved by exclusion.'

At the present there is no reliable way either to predict or prevent sudden infant death, and the cause remains elusive. Some would argue that we are no closer to finding a cause than the two mothers were in Solomon's time.

The current level of understanding of 'sudden infant death' could well be summarised by the following:

*Euthydemus*: 'Then tell me, do you know anything?'  
*Socrates*: 'Yes, I know many things but not anything of much importance.'

I would like to thank the Royal Society of Medicine Library for

their assistance and Professor J Scopes, St Thomas's Hospital, for his support and advice.

#### References

- <sup>1</sup> Knight, B. *Sudden death in infancy—the cot death syndrome*. London: Faber and Faber, 1983.
- <sup>2</sup> Beckwith JB. The sudden infant death syndrome. *Curr Probl Pediatr* 1973;3:1–36.
- <sup>3</sup> Parish WE, Baret AM. Hypersensitivity to milk and sudden death in infancy. *Lancet* 1960;ii:1106–10.
- <sup>4</sup> Peterson D. The epidemiology of sudden infant death syndrome. *Epidemiol Rev* 1980;2:97–112.
- <sup>5</sup> Wedgwood RJ, Benditt EP. Summary. In: *Sudden deaths in infants: proceedings of the conference on causes of sudden death in infants*. DHEW PHS Publication No 1412. Washington DC: DHEW PHS, 1965:132.
- <sup>6</sup> *Enquiry into sudden death in infancy*. Reports on Public Health No 113. London: HMSO, 1965.
- <sup>7</sup> Bergman AB, Beckwith JB, Ray CG, eds. Part II. Epidemiology, sudden infant death syndrome. *Proceedings of the second international conference on causes of sudden death in infants, Seattle, WA*. Washington: University of Washington Press, 1970:25–79.
- <sup>8</sup> Valdes-Depena. Sudden infant death syndrome: a review of the medical literature 1974–1979. *Pediatrics* 1980;66:597–614.
- <sup>9</sup> Kelly DH, Shannon DC. Sudden infant death syndrome and near sudden infant death syndrome: a review of the literature 1964 to 1982. *Pediatr Clin North Am* 1982;29:1241–61.
- <sup>10</sup> Steinschneider A. Prolonged apnea and the sudden infant death syndrome: clinical and laboratory observations. *Pediatrics* 1972;50:646–54.
- <sup>11</sup> Robinson RR, ed. SIDS 1974. *Proceedings of the Francis E Camps international symposium on sudden and unexpected deaths in infancy*. Toronto: Canadian Foundation for the Study on Infant Deaths, 1974:91–175.